ANALYSIS

23(97), May - June, 2019

ISSN
2321–7359
EISSN
2321–7367

Medical Science

The effectiveness of participation-based education on nurse performance in hospital Triage at disaster

Vahid Delshad[1], **Fahime Barghi Shirazi**[2,✉]

[1]Health in Emergency and Disaster Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
[2]Department of Nursing (Medical- Surgical Education), Shahid Beheshti University of Medical Sciences, Tehran, Iran.

✉**Correspondence author:**
Department of Nursing (Medical- Surgical Education),
Shahid Beheshti University of Medical Sciences,
Tehran, Iran

Article History
Received: 20 March 2019
Accepted: 02 May 2019
Published: May - June 2019

Citation
Vahid Delshad, Fahime Barghi Shirazi. The effectiveness of participation-based education on nurse performance in hospital Triage at disaster. *Medical Science*, 2019, 23(97), 404-409

Publication License
This work is licensed under a Creative Commons Attribution 4.0 International License.

General Note
Article is recommended to print as color digital version in recycled paper.

ABSTRACT

The study aimed to investigate the effectiveness of participation-based education and nurse performance in the field of hospital triage during disasters. In this experimental study, 120 nurses from Tehran hospitals were randomly divided into control and experimental groups (each 60). Data were collected by Hersey and Goldsmith's Nurses' Performance Questionnaire. The case group received a participation-based education program for one month and both groups completed the questionnaire 3 months after intervention and the data were then analyzed. Results of covariance analysis indicated that there was no significant difference

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS

between the performance of the hospital triage at the time of disaster before the educational interventions in the two groups, while after intervention, the factors significantly increased in the experimental group compared to control group (P<= 0.001). Based on this study, a participation-based education program is effective in promoting the nurse performance in the hospital triage at the time of disaster. In addition, control, monitoring and educational follow-up are recommended in the implementation of these programs.

Keywords: participation-based education, nurses' performance, hospital triage.

1. INTRODUCTION

Healthcare systems all over the world are facing increasing challenges and the development of health needs, affecting the potential capabilities of health and labor infrastructure (Mc Farlane et al., 2018). The sensitivity of these organizations especially hospitals requires attention to the consequences of any decision and practice given the variety and type of services, the covered population and the importance of health services in the social health. Therefore ignoring the consequences will result in irreparable consequences for patients and social health (Shirazi & Pour, 2013). Nurses are one of the largest groups of health care providers in the public and private sectors (up to 80% in some centers), and patients are more in contact with nurses than other caregivers (Salevaty, Khankeh, Dalvandi & Delshad, 2015). This group plays a major role in the quality of care and health promotion, and form a large work force (62%) of all staff of hospital as well as 36% of hospital costs. The field of practice for nurses' performance has been repeatedly referred to as one of the most exhausting works. Hospital triage is one of the critical parts of a hospital during a disaster. Disasters are events that cause death and injury to a wide range of people and cause severe disruption in the performance of the social service. However, it actually occurs as a result of natural and unnatural events (suddenly) and imposes severity and damage to a community or human society. Crisis management requires experience, readiness, skill, speed, intelligence and creativity to face surprising and unexpected situations (Minford & Manning, 2017).

A review of literature has shown that researchers have used several educational models to train nursing staff and improve their performance. Erdil and Dinc used training programs including holding training classes, providing booklet and self-learning books in the surgical wards of an educational hospital in Ankara to improve the nurse performance (Dinç & Erdil, 2000). However, Rosental et al., (2003) used the effect of training program including holding training courses, providing educational pamphlets with feedback on monthly performance as educational interventions. Evidence suggests that educational models that can lead to more stable changes in nursing practices are more important. The results of review of literature suggest that the participation-based educational models increase the potential for communication between learners and educators and can provide more sustainable behavioral change in contributors (Costantini, Donisi, Turrin & Diana, 1987).

Today, participation has been taken into account not only for various areas of health, but also in various areas like the development of rural and urban communities, governance and education (Delshad et al., 2015). Participation in different scientific domains has different meanings such as engagement, sharing, collaboration, co-operation and assistance. Participation in training is a process in which individuals gather together for the same purposes and solve problems in communication and interaction, and eventually make decisions together on issues discussed. In fact, participatory learning is an educational approach to learning and teaching that engages learner groups in working together to solve a problem, completing a task, or producing a product. Participatory learning is based on the belief that learning is inherently a social act in which participants speak together and learning occurs through this interaction. Although participation is considered as a strategy in the field of education, there is no study on the use of this educational model for in-service training of nurses. Regarding the importance of participation approach to making sustainable changes in learner's knowledge and performance, this study aims to determine the effect of participation-based education and nurse performance in the field of hospital triage during disasters through a semi-experimental post-test (two group) study.

2. MATERIALS AND METHODS

This is a quasi-experimental study on 120 nurses of hospital triage in Tehran hospitals. Sample size was calculated to be 120 with 95% confidence level and using sample size formula to compare the mean of two groups, and were randomly placed into two intervention and control groups as every other sample. Hersey and Goldsmith's organizational performance questionnaire was used to measure organizational performance of nurses. The questionnaire had 41 items and measures seven components: ability (items 1-2- 3-20), clarity (items 4- 5-6-7-8-38-39), contribution (items 9-11-12-13-15), encouragement (items 16-18-19-21-22-25), evaluation (items 23-30-31-32-33-34-35-36-37), credit (items 17-24-26-27-28-29), and environment (items 10-14-40-41-42). The validity of data collection tool has

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS

been measured through content validity and extensive literature review. Total reliability of the research tool was confirmed by calculating Cronbach's alpha 0.87.

Before the educational intervention, a pre-test was completed for both groups. After collecting and analyzing the data of the questionnaire, a participation-based education program was designed and developed. The case group was then subjected to the researcher intervention, i.e. participation-based education program, to improve the nurse performance in the field of hospital triage based on this model. The educational program was implemented using lecture methods along with questions and answers, presenting pamphlets and booklets in 5 sessions. The lecture method was selected because of saving time and resources, providing lots of theoretical content in one session, and creating a sense of security and usefulness in learners. The question and answer method was used to participate learners in the learning process. One month after the implementation of the training program, the data about the performance of research units was again collected by the same questionnaire. After data extraction, they were analyzed by SPSS 23, so that a paired t-test was used to compare the mean performance of nurses in each group. In this study, the following ethical considerations were observed:

1. Presentation of reference letter to the authorities of the research environment and obtaining permission from them
2. Acquiring permit from the hospital director for research
3. The choice to complete the performance measurement questionnaire and participate in the training program for the personnel was considered.
4. Personnel were assured that all information would be confidential and they were asked to refrain from mentioning their name in an awareness measurement questionnaire.

3. RESULTS

In this research, 120 nurses from Tehran hospitals included the study and completed the questionnaires in two stages (100% response rate). Their mean age was 40.41 with a standard deviation of 1.35 and a mean age range of 25 to 50 years. At the beginning of study, the two groups were similar in terms of demographic characteristics.

Results of the demographic variables are included in Table 1. Results show that 65.8% of respondents are women and 34.2% are men. Regarding the frequency distribution of respondents according to the age, results indicate that 12.5% of respondents aged 20-25, 22.5% aged 26-30, 31.6% aged 31-35, 18.3% aged 36-40 and 15% over 41.

Table 1 Demographic results

Variables	Frequency	Frequency percentage
Gender		
Female	79	65.8
Man	41	34.2
Age		
20-25	15	12.5
26-30	27	22.5
31-35	38	31.6
36-40	22	18.3
41 years up	18	15

In Table 2, the descriptive indices of the variables in the pre-test and post-test were reported for the groups. According to table, Kolmogorov-Smirnov is not significant for all variables. Therefore, the distribution of these variables in groups is normal and parametric tests can be used.

Table 2 Descriptive indices of variables for control and experiment groups

Intervention	Condition	Group	Mean	SD	K-SZ	P
Nurse performance	pre-test	Experiment	3.06	2.84	0.894	0.412
		Control	2.84	1.79	0.715	0.567
	Post-test	Experiment	4.28	2.41	0.529	0.854
		Control	2.90	2.79	0.427	0.879

One of the assumptions of covariance analysis is variance equation for post-test scores in both variables in the experiment and control groups, reported in Table 3.

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS

Table 3 Levine test results for examining the equality of variance of the experiment and control groups at the post-test

Variable	F	df1	df2	Significance
Nurse performance	1.32	1	119	0.248

As seen in Table 3, the pre-assumption of equality of variances for the post-test scores of both variables in the experiment and control groups was confirmed as not statistically significant. According to the pre-assumptions, covariance analysis was performed to obtain inferential results. In each variable, the post-test scores, dependent variable and the effect of the pre-test variable (as a synchronous variable) were controlled using covariance analysis.

The results of Table 4 relate to the pre-assumptions of the covariance analysis test. The results showed that the interaction of pretest and group is not significant on the dependent variable of nurses' performance with F = 0.01 at 0.91 level. Therefore, the insignificance of this interaction in this data supports the regression slope homogeneity hypothesis.

Table 4 Pre-assumption results of covariance analysis in nurses' performance for homogeneity of regression slope

Dependent variable	Source of change	Sum of squares	df	Mean squares	F	P
Nurse performance	Group	67.54	1	67.54	0.89	0.35
	pre-test	54.49	1	54.49	0.72	0.40
	Effectiveness	0.90	1	0.90	0.01	0.91
	Error	2105.74	58	75.20		
	Total	952159.00	60			

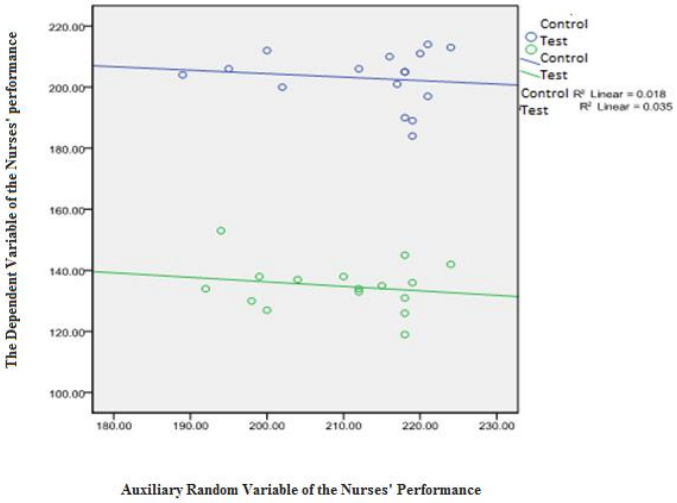

Figure 1 Linearity of regression for covariance analysis

As shown in Figure 1, the regression lines are continued for the control and test groups in a nearly parallel manner and do not interrupt each other. This means that there is a linear relationship between the auxiliary random variable and the dependent variable of the nurses' performance. This condition is one of the pre-assumptions of covariance analysis.

Table 5 Results of covariance analysis of the effect of participation-based education on the performance of nurses in the experiment and control group

Dependent variable	Source of Change	Sum of squares	DoF	Mean squares	F	Significance	Effectiveness	Power
Nurse performance	Post-test	2760.75	1	2760.75	37.00	0.001	0.57	1.00
	Group	36380.52	1	36380.52	500.81	0.001	0.94	1.00
	Error	2106.64	58	72.64				

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS

	Total	952159.00	60					

Covariance analysis was used in analyzing this hypothesis. The results of Table 5 showed that there is a significant difference between the mean scores of the posttest of two groups of control and experiment in the dependent variable of nurses' performance (F = 37.00, P = 0.01). Also, the effect of independent variable on the dependent variable, nurses' performance, was effective and there was a significant difference between the control and experiment group (P <0.001, F = 500.181).

4. DISCUSSION AND CONCLUSION

The overall aim of this study was to evaluate the effectiveness of participation-based education and nurses' performance in the field of hospital triage during disasters. Results showed that before intervention, there was no significant difference between the mean scores of nurse performance in the field of hospital triage at the time of disaster in the intervention and control groups, while after the intervention, the mentioned factors significantly increased in the experiment group compared to the control group, but in the control group there was no significant difference in the mean score of the nurses' performance in the hospital triage at the time of disaster.

The results of this study showed that the implementation of a participation-based education program was effective in improving the nurse performance in the field of hospital triage at the time of disasters in the studied units. These results were consistent with the results of research by Warren et al., (2004), Goldstein et al., (2017), Gräff et al., (2016), and Spangler(2017) on the nurse performance.

Increasing the mean score of nurses' performance in the field of hospital triage at the time of disasters indicated that after intervention, the subjects had higher performance in the field of hospital triage at the time of disaster. The results showed that the mean score of nurses' performance in the field of hospital triage at disaster before education was 3.06 which increased to 4.28 after intervention and this increase was statistically significant (P <0.001).

Based on the above results, although the implementation of routine training programs (implementation of a lecture) in the control group led to an increase in the score of nurse performance, but the developed training intervention based on nurses 'participation contributed to an increase in the mean score of nurses' performance in the experiment group compared to the control group. The mean difference was significant between the two groups. In other words, educational intervention based on the participation of nurses was more effective in increasing the nurses' performance score in the field of hospital triage at disasters compared to routine educational intervention (P<0.001). Compared to previous studies, the most important point of this study was that the present study shared the interested nurses working in special units in the preparation and implementation of educational interventions, while in previous studies, stakeholders' views (i.e. nurses) has not been involved in the preparation and implementation of educational intervention; and, moreover, through having a control group, it was possible to compare the current method of personnel in-service training and participatory approach. Another strength of this study was that the effect of educational intervention on the nurse performance in the field of hospital triage at disasters was evaluated in this study.

Conflict of interest

None

Financial support

None

Ethical Clearance

This study was approved by the ethics committee of Iran &University of Social Welfare and Rehabilitation Sciences and all patients gave written informed. In this study the ethical code was IR.SBUMS.rec.1394.105.118

REFERENCE

1. McFarlane DC, et al. Faster clinical response to the onset of adverse events: A wearable metacognitive attention aid for nurse triage of clinical alarms. PloS one. 2018; 13:e0197157.
2. Shirazi A, & Pour S. The Effect of Organizational Error Management Culture on Organizational Performance (Case Study: Nurses of a State Hospital in Mashhad), Second International Conference on Management, Entrepreneurship and Economic Development, Qom, Payame Nour University, 2013. (In Persian)
3. Salevaty J, Khankeh HR, Dalvandi A, Delshad V. The impact of nurses training and applying functional and nonstructural hospital safety in preparedness of Razi and Day hospitals in disasters based on hospital safety index.; 2015; 17-24.

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS

4. Minford EJ, Manning CL. Current status and attitudes to self-care training in UK medical schools. J Compassionate Health Care. 2017; 4:3.
5. Dinç L, Erdil F. The effectiveness of an educational intervention in changing nursing practice and preventing catheter-related infection for patients receiving total parenteral nutrition. INT J NURS STUD. 2000; 37:371-9.
6. Rosenthal VD, Guzman S, Pezzotto SM. Effect of an infection control program using education and performance feedback on rates of intravascular device-associated bloodstream infections in intensive care units in Argentina. Am. J Infect. Control. 2003; 31:405-9.
7. Costantini M, Donisi PM, Turrin MG, Diana L. Hospital acquired infections surveillance and control in intensive care services. Results of an incidence study. Eur J Epidemiol. 1987; 3:347-55.
8. Delshad V, et al. The effect of activating early warning system on motahari hospital preparedness. Health Emergen Dis. 2015; 1:3-8.
9. Warren DK, et al. The effect of an education program on the incidence of central venous catheter-associated bloodstream infection in a medical ICU. Chest. 2004; 126:1612-8.
10. Goldstein LN, et al. The accuracy of nurse performance of the triage process in a tertiary hospital emergency department in Gauteng Province, South Africa. S Afr Med J. 2017; 107:243-7.
11. Gräff I, et al. Nurse staffing calculation in the emergency department-performance-oriented calculation based on the manchester triage system at the university hospital Bonn. PloS one. 2016; 11:e0154344.
12. Spangler D. An evaluation of nurse triage at the Emergency Medical Dispatch centers in two Swedish counties. 2017.

© 2019 Discovery Publication. All Rights Reserved. www.discoveryjournals.org | OPEN ACCESS